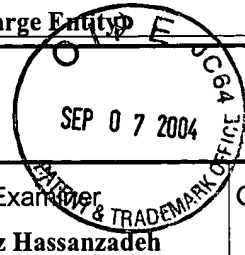


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**COMBINED TRANSMITTAL OF APPEAL BRIEF TO THE BOARD OF PATENT
APPEALS AND INTERFERENCES & PETITION FOR EXTENSION OF TIME
UNDER 37 C.F.R. 1.136(a) (Large Entity)**

Docket No.
112780-017

In Re Application Of: **Tabuchi, T., et al.**



Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/730,813	December 6, 2000	Parviz Hassanzadeh	24573	1763	9116

Invention: **SURFACE TREATMENT APPARATUS**

COMMISSIONER FOR PATENTS:

This is a combined Transmittal of Appeal Brief to the Board of Patent Appeals and Interferences and petition under the provisions of 37 CFR 1.136(a) to extend the period for filing an Appeal Brief.

Applicant(s) hereby request(s) an extension of time of (check desired time period):

☒ One month ☐ Two months ☐ Three months ☐ Four months ☐ Five months

from: August 11, 2004 until: September 11, 2004
Date Date

The fee for the Appeal Brief and Extension of Time has been calculated as shown below:

Fee for Appeal Brief: \$330.00

Fee for Extension of Time: \$110.00

TOTAL FEE FOR APPEAL BRIEF AND EXTENSION OF TIME: \$440.00

The fee for the Appeal Brief and extension of time is to be paid as follows:

☒ A check in the amount of _____ for the Appeal Brief and extension of time is enclosed.

☐ Please charge Deposit Account No. _____ in the amount of _____

☒ The Director is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. **02-1818**

☒ Any additional filing fees required under 37 C.F.R. 1.16.

☒ Any patent application processing fees under 37 CFR 1.17.

☒ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. **02-1818**

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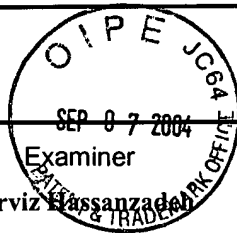
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Application No.

09/730,813

Filing Date

December 6, 2000

Examiner

Parviz Hassanzadeh

Customer No.

24573

Group Art Unit

1763

Confirmation No.

9116

Invention: **SURFACE TREATMENT APPARATUS**

TO THE COMMISSIONER FOR PATENTS:

This combined Transmittal of Appeal Brief to the Board of Patent Appeals and Interferences and petition for extension of time under 37 CFR 1.136(a) is respectfully submitted by the undersigned:


Signature

Dated: September 1, 2004

Michael S. Leonard (Reg. No. 37,557)
Bell, Boyd & Lloyd LLC
P.O. Box 1135
Chicago, Illinois 60690-1135
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09/730,813

GP 1763

TRANSMITTAL LETTER
(General - Patent Pending)

Docket No.
112780-017

In Re Application Of: Tabuchi, et al.

SEP 07 2004

Application No.

09/730,813

Filing Date

December 6, 2000

Examining

Parviz Hassanzadeh

Customer No.

24573

Group Art Unit

1763

Confirmation No.

9116

Title: SURFACE TREATMENT APPARATUS

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Combined Transmittal of Appeal And Petition for Extension of Time (duplicate); Appeal Brief (8 pgs.) including appendix (2 pgs.) 10 pgs. in total in triplicate; check in the amount of \$440.00; return receipt postcard.

in the above identified application.

- ☐ No additional fee is required.
- ☒ A check in the amount of \$440.00 is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. 02-1818 as described below.
- ☐ Charge the amount of
- ☒ Credit any overpayment.
- ☒ Charge any additional fee required.

Signature

Dated: September 1, 2004

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellant(s): Tabuchi, T., et al.
Appl. No.: 09/730,813
Conf. No.: 9116
Filed: December 6, 2000
Title: SURFACE TREATMENT APPARATUS
Art Unit: 1763
Examiner: Parviz Hassanzadeh
Docket No.: 0112780-00017

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450



APPELLANTS' APPEAL BRIEF

Sir:

Appellants submit this Appeal Brief in support of the Notice of Appeal filed on June 11, 2004. This Appeal is taken from the Final Rejection dated January 7, 2004.

I. REAL PARTY IN INTEREST

Komatsu Limited is the real party in interest of the above-identified patent application by virtue of an assignment executed December 25, 2000, and recorded in the United States Patent and Trademark Office on Reel 011616, Frame 0345.

II. RELATED APPEALS AND INTERFERENCES

To the best of Appellants' knowledge, there are no pending appeals or interferences that will directly affect, have bearing on, or that will be directly affected by the Board's decision with respect to the above-identified Appeal.

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III. STATUS OF CLAIMS

Claims 1, 3, and 5-19 are pending in the present application. Claims 1, 5-12 and 19 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description

requirement. A copy of these claims is attached in the Appendix. Claims 3 and 13-18 were withdrawn from consideration and claims 2 and 4 were canceled.

IV. STATUS OF AMENDMENTS

The last Amendment considered by the Examiner was filed on November 5, 2003. No amendments were filed subsequent to the final Office Action of January 7, 2004.

V. SUMMARY OF INVENTION

The present application discloses a surface treatment apparatus for making raw material gas plasma by generating plasma, in a casing provided with plasma generation means, a raw material gas inlet and a substrate support table, by the plasma generation means and giving plasma treatment to the surface of a substrate placed on the substrate support table. A casing is defined into two chambers, a plasma generation chamber provided with the plasma generation means and a substrate treatment chamber provided with the substrate support table. The substrate treatment chamber and the plasma generation chamber are connected through one or more plasma nozzles. At least one of the plasma nozzles is made a hollow electrode discharge generation area. (See pg. 7, lines 3-16).

In particular, Figure 1 illustrates an example of the disclosed surface treatment apparatus for making raw material gas plasma. The surface treatment apparatus 1 makes raw material gas plasma by generating plasma in a casing 2 defined into two chambers; a plasma generation chamber 3 and a substrate treatment chamber 4. (See pg. 33, lines 7-9). The plasma generation chamber is provided with plasma generation means including a plasma generation chamber 3 and a pair of plasma generation electrodes; a cathode electrode 5 and an anode electrode 6. (See pg. 33, lines 10-17). The substrate treatment chamber 4 and the plasma generation chamber 3 are connected through one or more plasma nozzles 7 formed in the anode electrode 6. (See page 33, lines 21-25) A raw material gas inlet 8 is provided in an upper wall of the casing and electrode 5. (See page 37, lines 17-23). The substrate treatment chamber 4 is provided with the substrate support table 9 for giving plasma treatment to the surface of a substrate S placed on the substrate support table 9. (See page 38, lines 12-23).

At least one of the plasma nozzles 7 is made a hollow electrode discharge generation area. One example of the plasma nozzle 7 as a hollow electrode discharge generation area. (See page 34, line 13 - page 35, line 1). A plasma nozzle 7 being a hollow electrode discharge generation area provides advantages. For example, new plasma is generated at the plasma nozzle 7 and is introduced into the substrate treatment chamber 4 which increases the density of the plasma in the substrate treatment chamber 4 otherwise generated in the plasma generation chamber 3. Further, the hollow electrode discharge generation area of the plasma nozzle increases species contributing to the film formation on the substrate S. Even further, the speed of film formation on the substrate S is remarkably increased. (See page 40, line 10 - page 41, line 5). Various other examples of a plasma nozzle as a hollow electrode discharge generation area are described in the Specification and shown in the drawings.

VI. ISSUE

A. Whether amendments to claim 1 presented in the Appellants' response filed July 1, 2003 introduced new matter and are, thus, objectionable under 35 U.S.C. §132.

B. Whether claims 1, 5-12, and 19 fail to comply with the written description requirement of 35 U.S.C. §112, first paragraph.

VII. GROUPING OF CLAIMS

Claims 1, 5-12, and 19 stand or fall together.

VII. ARGUMENT

The Appellants first note that the rejection of the claims under 35 U.S.C. §112, first paragraph was issued based on the assertion that amendments to the claims effected the addition of new matter to the specification in circumvention of the proscription of 35 U.S.C. §132 hastening an objection to the specification also. Although the Appellants recognize that objections asking for new matter to be deleted are subject to supervisory review by petition, the MPEP directs that where both the claims and specification allegedly contain new matter, and there has been both a rejection and objection by the Examiner, the issue becomes appealable and should not be decided by petition. (See M.P.E.P. §2163.06, Section II). Thus, the Appellants

will address both the issues of the claim rejections and specification objections in the following arguments.

A. The amendments to claim 1 presented in the Appellants' response filed July 1, 2003 do not introduce new matter and are complies with the requirements of 35 U.S.C. §132..

At page 2 of the final Office Action, Examiner objected to the amendment to the specification submitted July 1, 2003, under 35 U.S.C. §132 as allegedly containing new matter. This amendment, in particular, narrowed the claimed range of the opening width W(1) of the claimed smallest portion on the plasma nozzles from $1\text{ mm} \leq W(1) \leq 100\text{ mm}$ to $10\text{ mm} \leq W(1) \leq 100\text{ mm}$. The Appellants submit, however that the narrowed range clearly still falls within the range described in the specification as originally filed. The amendments did not broaden the claimed ranges. Indeed, the Examiner did not assert that the amended lower endpoints are outside of the ranges disclosed in the application as originally filed. Accordingly, the narrowing amendments, which are clearly within the disclosed ranges, do not to introduce new subject matter.

In the final Office Action, the Examiner appears to evince a dogmatic adherence to the notion that because the specification does not literally describe the claim terminology in *ipsis verbis*, the change to claimed range is necessarily new matter. This notion is incorrect and does not comport with the relevant case law, including *In re Wertheim*, 541 F.2d 257, 191 USPQ 90, 98 (CCPA 1976), which was cited by the Examiner. An *ipsis verbis* disclosure is not necessary to satisfy the written description requirement of section 112. The disclosure need only reasonably convey to one of ordinary skill in the art that the inventors had possession of the subject matter in question. See *In re Edwards*, 568 F.2d 1349, 1351-52, 196 USPQ 465, 467 (CCPA 1978). In the present application, the description reasonably conveys to one of ordinary skill in the art that the inventors had possession of the claimed range, because the narrowed range clearly still falls within the range described in the specification as originally filed.

Additionally, the burden of showing that the claimed invention is not described rests on the PTO to give reasons why a description not in *ipsis verbis* is insufficient. *In re Wertheim*, 541 F.2d 257, 265. The Examiner has failed to meet this burden on behalf of the PTO. In the final Office Action, the Examiner alleges that because a hollow discharge is not formed at a nozzle

diameter of 5 mm even though this is within the range of 1 mm to 100 mm, that changing the minimum opening width required for generating how discharge from 1 mm to 10 mm is considered new matter. This reasoning, which is actually irrelevant to the issue of new matter, falls short of meeting the burden to show why the description is insufficient. Merely because at particular frequencies (and, thus, wavelengths) certain nozzle widths fail to effect a hollow discharge (e.g., 13.56 MHz and 5mm), this does nothing to negate that a range of widths was described in the specification. Additionally, this argument conveniently ignores that at a different frequency, the characteristics of forming a hollow discharge will change at that same width, as will be described later in this brief. Following the Examiner's flawed reasoning to its extreme, one would have to conclude that the originally claimed range also was not supported by the disclosure because it should have omitted certain widths that did not effect hollow discharge at a particular frequencies. This is nonsensical, and, more to the point, does not present a valid reason why the present description not in *ipsis verbis* is insufficient.

Accordingly, the amendment to claim 1 did not present new matter.

B. Claims 1, 5-12, and 19 comply with the written description requirement of 35 U.S.C. §112, first paragraph.

Claim 1 does not recite "the minimum opening width required for generating hollow discharge must be more than 10 mm." (emphasis supplied) Rather, claim 1 recites "an opening width $W(1)$ of the smallest portion on the plasma nozzles is set in a range satisfying $10\text{ mm} < W(1) < 100\text{ mm}$." Nowhere does claim 1 recite a "minimum opening width required." Appellants' invention, as claimed in claim 1, pertains to a range of the opening width of the plasma nozzle in which hollow discharge is generated. The Office Action confuses Appellants' claimed lower end of a range of the opening which produces hollow discharge with a "required minimum" opening to produce hollow discharge. Claim 1 is not limited to a "minimum opening width required for generating hollow discharge" and thus, the rejections are misplaced and should be withdrawn.

As argued above, the Examiner appears to be using a pedantic test for determining whether there is new matter by looking for an *ipsis verbis* description. However, as presented

above, this is not the correct test to determine whether the amendments include new subject matter and comply with 35 U.S.C. § 112, first paragraph.

In order to comply with the written description requirement of §112, first paragraph, the specification “need not describe the claimed subject matter in exactly the same terms as used in the claims; it must simply indicate to persons skilled in the art that as of the [filing] date the applicant had invented what is now claimed.” *All Dental Prodx LLC v. Advantage Dental Products Inc.*, 64 USPQ2d 1945 (Fed. Cir. 2002); *Eiselstein v. Frank*, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995) (citing *Vas-Cath*, 935 F.2d at 1562, 19 USPQ2d at 1115, and *In re Wertheim*, 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976)).

In the present application, the original application clearly indicates to persons skilled in the art that hollow discharge is generated with “an opening width $W(1)$ of the smallest portion on the plasma nozzles is set in a range satisfying $10\text{ mm} < W(1) < 100\text{ mm}$ ” as featured in claim 1. Appellants’ specification as originally filed teaches one of ordinary skill in the art the objective of providing hollow discharge to improve the surface treatment of the substrate. Appellants’ specification as originally filed further teaches one of ordinary skill in the art how to achieve that objective. Examples of numerical ranges for the diameter of recesses or nozzles to generate hollow discharge for improving surface treatment of the substrate are provided to the skilled artisan by Appellants’ application. Appellants’ teachings unquestionably include the range of 1 mm to 100 mm for the nozzle to generate hollow discharge. Appellants’ teachings also unquestionably include narrower ranges to produce hollow discharge because the original application expressly states the narrower range of 1 mm to 20 mm. One of ordinary skill in the art armed with Appellants’ objective of producing hollow discharge, Appellants’ plasma nozzle opening in a starting range of 1 mm to 100 mm, Appellants’ teachings of narrower ranges, and Appellants’ further teachings of how to produce hollow discharge would be able to achieve a plasma nozzle set in the ranges of $10\text{ mm} < W < 100\text{ mm}$ and $10\text{ mm} < W < 20\text{ mm}$. Accordingly, Appellants’ application indicates to the skilled artisan the claimed range and complies with the requirements of §112, first paragraph. Thus, the amendments do not include new subject matter and the rejections should be withdrawn.

The Examiner cites MPEP §2163.05, III. Range Limitation and *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) in support of the rejections. However, reliance on those citations is misplaced. The court in *In re Wertheim* found new matter when a range was amended to be broadened, not narrowed. The range was amended from “25%-60%” to “at least 35%.” That amendment was determined to be new matter because the “at least 35%” had no upper limit and was thus broader than the disclosed upper limit of 60%. In contrast, the court in *In re Wertheim* also found that claiming a range “between 35% and 60%,” even though the specification described a broad range of 25% to 60%, met the written description requirement, thus reversing the Examiner’s rejection. Similar to *Wertheim*, in the present case, Appellants have not broadened the range beyond the originally disclosed range, as was the new matter problem in *In re Wertheim*. Rather, Appellants’ amendment is within the originally disclosed range similar to the claimed range held by the court to be acceptable. Accordingly, the Office Action’s reliance on MPEP §2163.05, III. Range Limitation and *In re Wertheim* is not well founded and the rejections should be withdrawn.

As discussed earlier, the Examiner at page 3 in the final Office Action asserts that a previous response of the Appellants’ indicated that the hollow discharge is not generated at the nozzle diameter of 5 mm with the frequency power in the RF region, and argues that the previous amendment is considered as new matter because the amendment is inconsistent with the original application. However, if the high-frequency power is settled with the frequency over the VHF region, the hollow discharge can be generated with the opening diameter of 5 mm. As the Appellants’ have argued during prosecution, there exists the plasma sheath layer, in which no ion having a plus charge can not exist, around the high-frequency electrode. Therefore, in order to excite high-density hollow plasma, the diameter of the opening of the nozzle should have at least a double size with respect to the thickness of the sheath layer. In case of the high-frequency excitation plasma, the thickness of the sheath layer is about 2 to 3 mm in 13.56 MHz of the RF region and about 0.5 to 1.0 mm in 100 MHz of the VHF region. Thus, in order to generate the “hollow discharge”, the lower limit of the diameter (W) of the opening of the nozzle, when the margin is 50%, is about 10 mm in the RF region and about 3 mm with the frequency of high-frequency power in the VHF region. That is, when the diameter (W) of the opening of the nozzle is 3 mm, the hollow discharge is not generated when the frequency of high-frequency power is

within the RF region, but the hollow discharge can be generated when the frequency power is within the RF region.

As described in Appellants' previous Office Action responses, the assumption for generation of hollow discharge relies on the frequency of the power. Under 13.56 MHz (RF discharge region) mentioned as one example in the previous response, the hollow discharge is not generated with the opening diameter of 5 mm. However, as also referred to in the previous responses, in the band of frequency over about 100 MHz (VHF region), the hollow discharge is generated with the opening diameter of 1 mm.

Accordingly, the presently examined claims indeed comply with the written description requirement of 35 U.S.C. §112, first paragraph.

CONCLUSION

No new subject matter was added to the specification in traverse of 35 U.S.C. §132 by the amendment of July 1, 2003. Furthermore, since no new matter was added, claims 1, 5-12, and 19 comply with the requirements of 35 U.S.C. §112, first paragraph. For this reason, the Appellants respectfully submit that the objection of the specification under 35 U.S.C. §132 and the rejection of claims 1, 5-12, and 19 are an error in law and in fact and should, therefore, be reversed by this board.

Respectfully submitted,

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BY 

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Dated: September 1, 2004

APPENDIX

Claim 1. A surface treatment apparatus for making raw material gas plasma by generating plasma, in a casing provided with plasma generation means, a raw material gas inlet and a substrate support table, by the plasma generation means and giving plasma treatment to the surface of a substrate placed on said substrate support table, wherein:

said casing is defined into two chambers, a plasma generation chamber provided with said plasma generation means and a substrate treatment chamber provided with said substrate support table;

said substrate treatment chamber and said plasma generation chamber are connected through one or more plasma nozzles;

at least one of said plasma nozzles is made a hollow electrode discharge generation area; and

an opening width $W(1)$ of the smallest portion on the plasma nozzles is set in a range satisfying $10\text{ mm} < W(1) \leq 100\text{ mm}$.

Claim 5. A surface treatment apparatus according to claim 1, wherein said plasma nozzle forms a substantially continuous and elongated slit shape that can be drawn with a single stroke of the brush.

Claim 6. A surface treatment apparatus according to claim 5, wherein said plasma nozzle is whorl shaped.

Claim 7. A surface treatment apparatus according to claim 5, wherein said plasma nozzle is meandering shaped.

Claim 8. A surface treatment apparatus according to claim 5, wherein said plasma nozzle is connected straight lines shaped.

Claim 9. A surface treatment apparatus according to claim 5, wherein said plasma nozzle is formed symmetrically in respect with its center.

Claim 10. A surface treatment apparatus according to claim 5, wherein a slit width W of the plasma nozzle is set in a range satisfying either of $W \leq 5L(e)$ or $W \leq 20X$:

where $L(e)$ is an electron mean free path in respect to atom or molecular species (active species) of the smallest diameter among raw material gas species and electrically neutral atom or molecular species (active species) produced therefrom by decomposition, under the desired plasma generation conditions; and

X is a thickness of a sheath layer generated under the desired plasma generation conditions.

Claim 11. A surface treatment apparatus according to claim 5, wherein said plasma nozzle varies its slit width from a center to an outer circumference thereof.

Claim 12. A surface treatment apparatus according to claim 5, wherein said plasma nozzle varies its slit depth from a center to an outer circumference thereof.

Claim 19. A surface treatment apparatus of one of claims 1 and 5-12, wherein said apparatus comprises potential applying means for applying a desired potential to the substrate.